KTX – PC

User Manual

KumoTeck

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Tech Support

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1 Introduction

Thank you for purchasing KTX-PC from us. This Manual explains how we treat this robot and its accessories. Please read this manual before you break your robot.

This Manual describes basic use of this robot. Please refer to the other detailed manuals and tutorials for more detailed information.

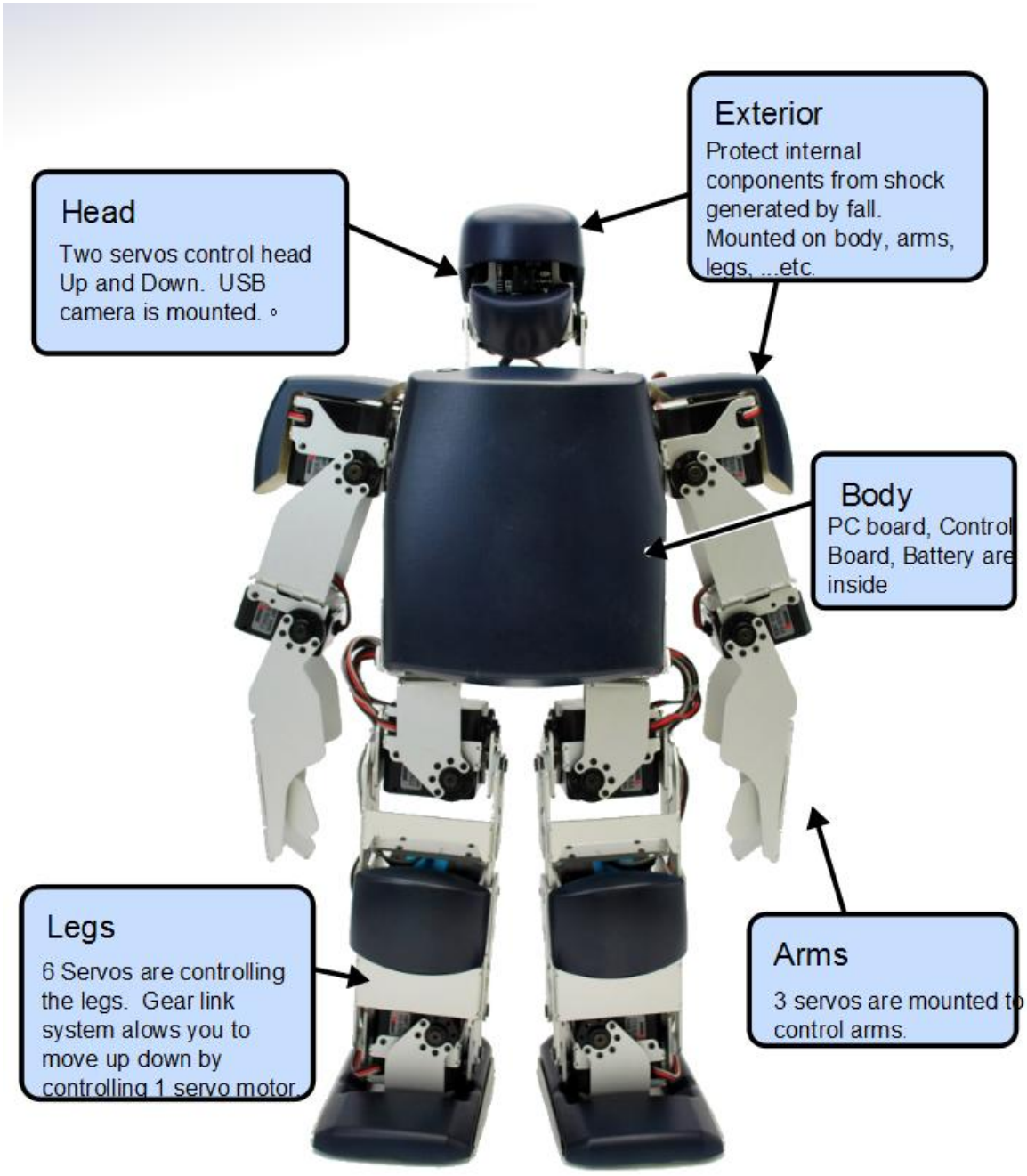
2 Safety

Robot has tremendous power on each servo mounted on his joints, and improper use of the robot may result in serious injuries. Please follow safety issues below.

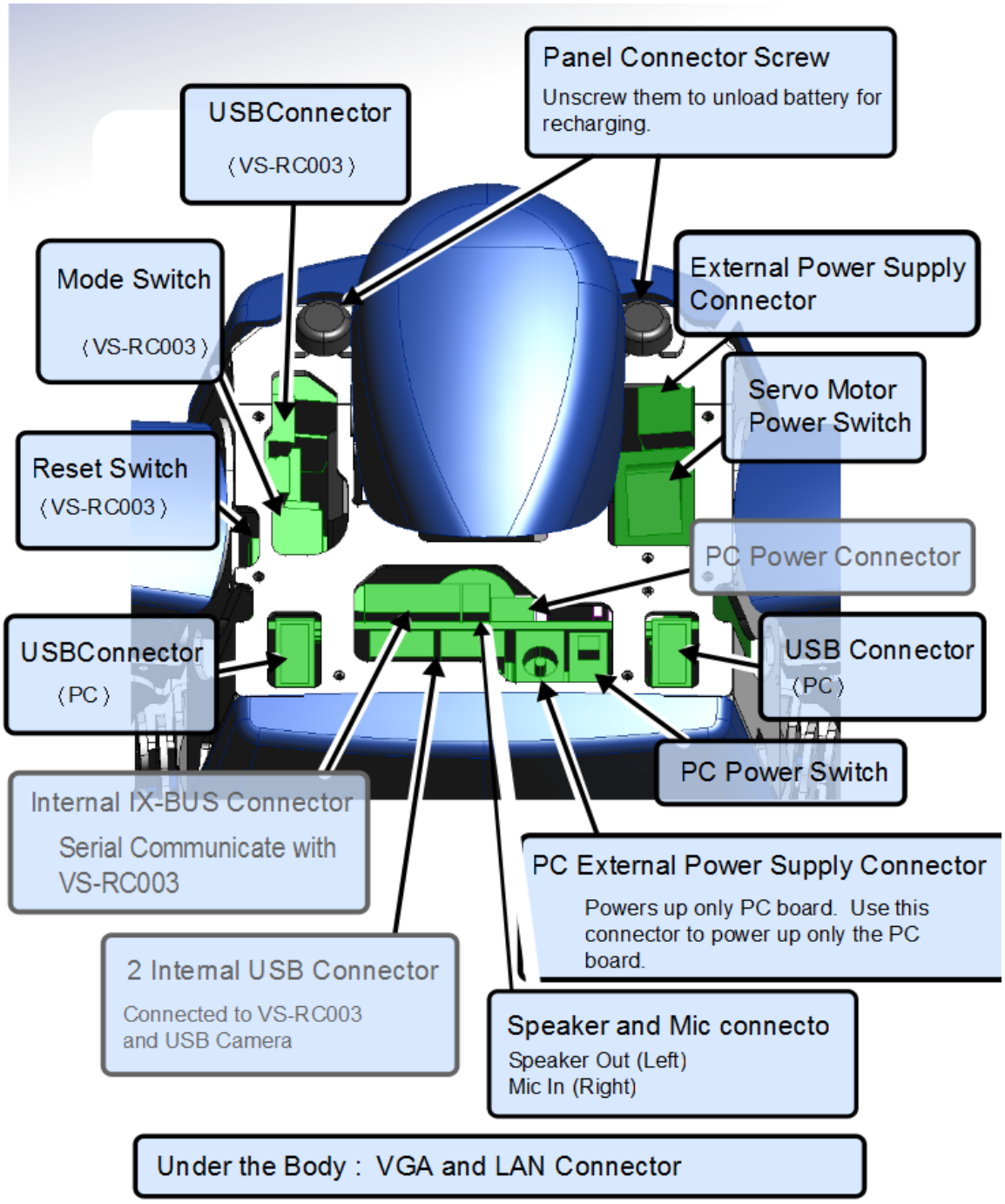
<!> Please hold his body, instead of holding his arms or legs, when the robot is powered up.
<!> Do not operate the robot in front of small children.
<!> Do not apply any water on its body. It may case short, fire, or electric shock.
<!> Do not place any unspecified metal parts into his body. It may case short, fire, or electric shock.

3 Features and Specification

3.1 Name of the Components and Features (Front)


Exterior
Protect internal conponents from shock generated by fall. Mounted on body, arms, legs, ...etc.
Head
Two servos control head Up and Down. USB camera is mounted.
Body
PC board, Control Board, Battery are inside
Legs
6 Servos are controlling the legs. Gear link system alows you to move up down by controlling 1 servo motor
Arms
3 servos are mounted to control arms.

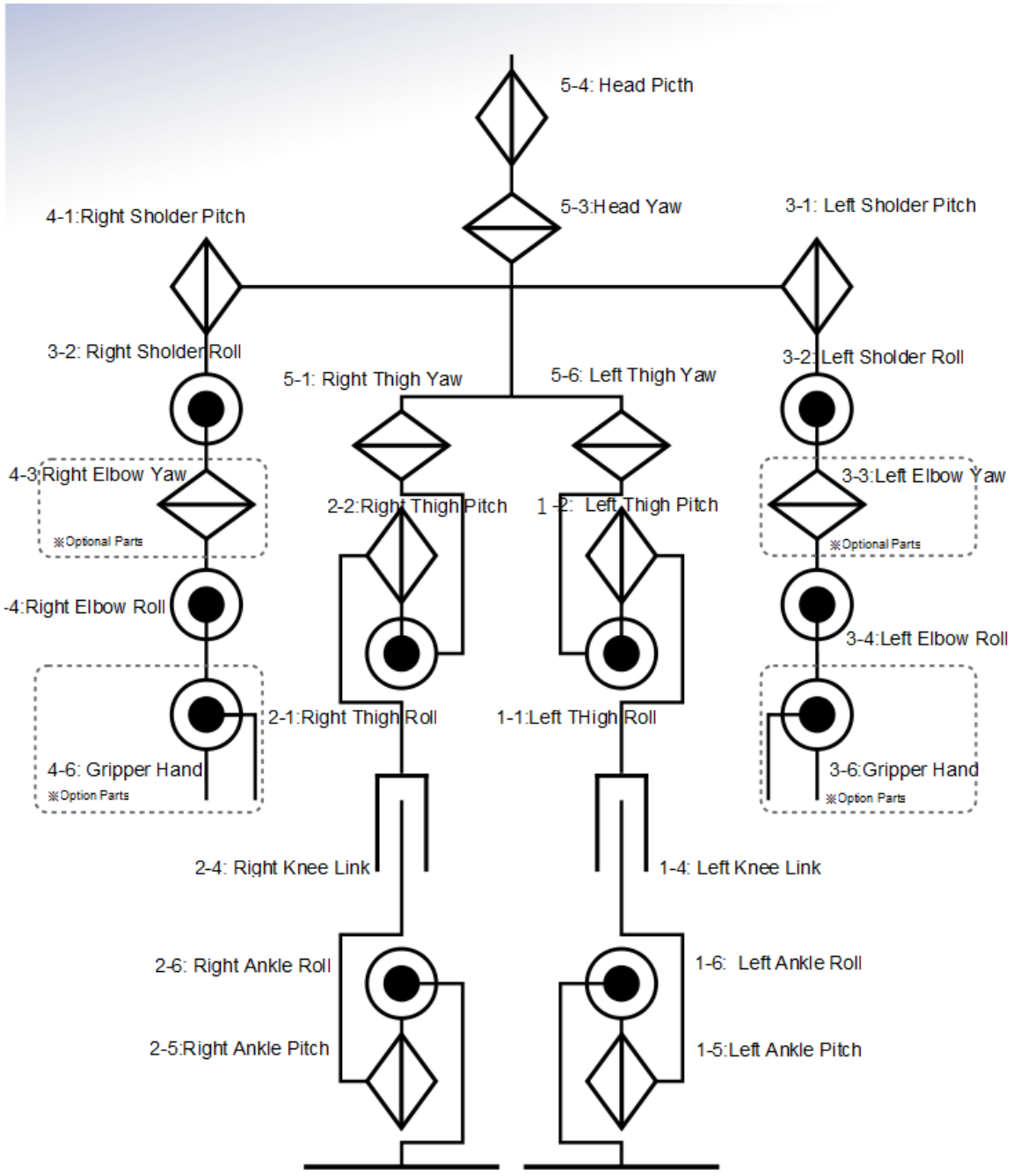
3.2 Name of the Components and Features (Top View)



3.3 Specification

Size	390(H)×225(W)×115(D)mm
Weight	2.2kg
20 Degree of Freedom	Head (2), Arms (6), Legs (12)
Servo Motor	VS-S092j x 18, VS-S281 x 2
Main CPU	PICO820 (Intel Atom Z530 1.6GHz)
Memory	PICO820 （Intel Atom Z530 1.6GHz
Storage	CF Flash Memory 8GB
Secondary CPU	VS-RC003HV （ARM7 60MHz）
Sensor	USB Camera, VS-IX001 (2 axel gyro sensor and 3 axel accelerometer
Exterior	Shock-absorbing material
Speaker	Mono Speaker
Battery	7.2 V Ni Battery, PC board Power Adapter
Supported Interface	2 USB 2.0 port, 1 VGA, 1 LAN, 1 Speaker, 1 Microphone
Supported Operating System	XP/Vista/Win7(Partial), Linux

3.4 Joints



※ Numbers on the joints describes connection on the VS-RC003 board.

4 Parts and Accessories

- Robot
- Ni Battery (2 Pack)
- Ni Battery Charger
- Battery and Charger Cable
- USB Communication Cable
- Wireless Controller VS-C1
- PC Power Adapter
- CF Flash Memory (Inside Robot)
- SO-DIMM1GB (Inside Robot)
- CD (Manual, RobovieMaker2, Sample Software)
- PC Board Accessories
- USB Camera Accessories

5 Hardware

5.1 Battery

5.1.1 Charging Battery

Please follow the step below for charging a battery.

1) Connect battery charger to wall power supply

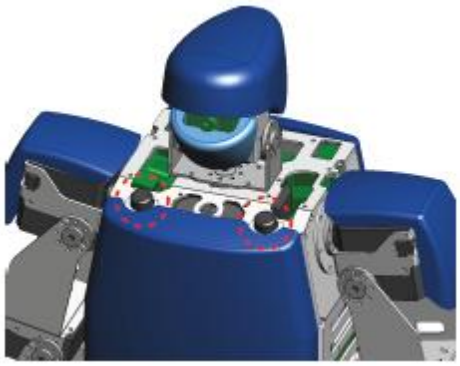
<!> Make sure that no battery is connected to the charger

2) Connect battery to the charger by using connection cable. The LED will turn into red.

<!> It will take about 2 hours to recharge the battery <!> If you charge a battery while it still has power left, you may lose some capacity of your battery. <!> Please keep your eyes on your battery and charger while you are charging the battery. <!> Make sure there is no flammable materials or fire around battery or charger.

3) After battery is fully charged (LED turns into Green), unplug the battery. Then, unplug the charger from wall power adapter.

5.1.2 Connecting Battery to Robot



1) Open front panel of the robot by unscrewing two screws holding the panel. You can open the panel without completely removing the screws.
2) Install 2 fully charged batteries. Connect battery cable to the white connecter on the left inside body.

<!> Please remove the batteries after the use.

5.2 Connecting Hardware to the PC Board

5.2.1 PC Board Power Adapter

You can use PC board Power supply adapter to power the PC board and servo control board. In this case, you will not be able to run the servos off of this power supply.

5.2.2 Connecting USB Devices, Display, and LAN Cable

You can connect up to 2 USB devices, 1 VGA, and 1 LAN.

<!> If you are connecting USB HDD or USB CD/DVD Drive, please use them on self power mode.
<!>If you are running the robot with that hardware connected, make sure that the robot will not fall or damage the cable or the connecters.

5.2.3 Applying Power to the robot from External Power Supply

You can use external DC power supply (8.5V or less) to power up the robot without battery.

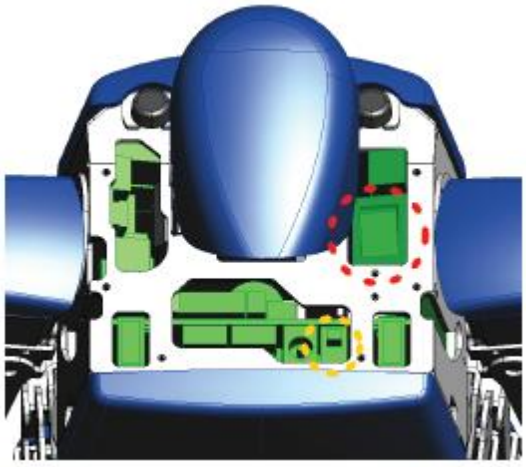
<!> Do not apply any DC power source bigger than 8.5V

5.2.4 Connecting a Speaker and a Microphone

You can connect small speaker to the speaker output pins. By default, the wires coming out from the speaker is connected to the servo control board (VS-RC003).

You can also connect a condenser microphone to the robot. The pin close to the board is GND and the other pin is the signal.

5.3 Basic Operation and Exterior



5.3.1 Turning on the Servo Power Switch

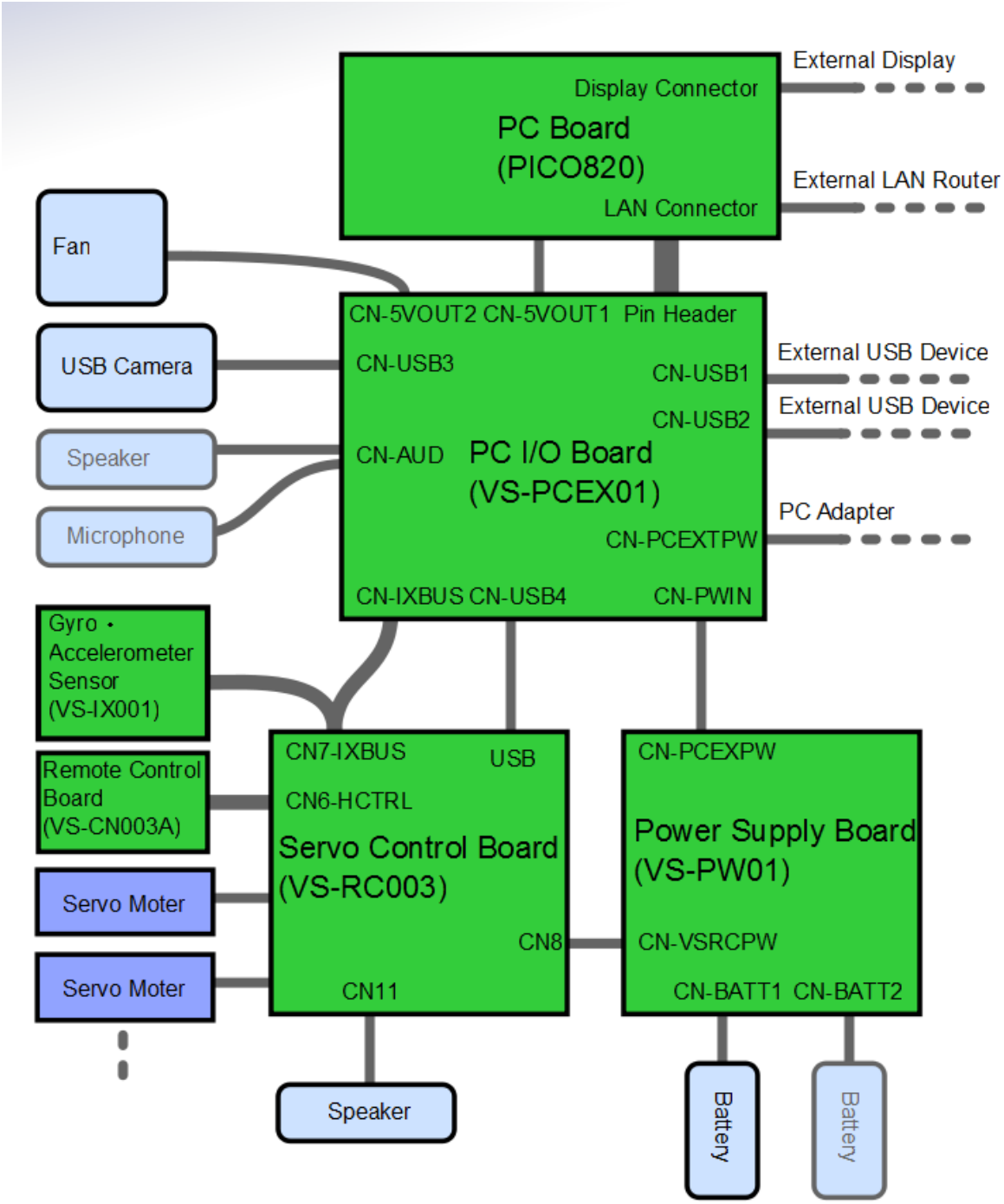
You can turn on the servos and servo control board by servo power switch, circled in red in the above picture. The sign "-" represents ON and "o" represents OFF. White LED next to the switch comes on when the power applied.

5.3.2 Turning on the PC power switch

You can turn on the PC board by the PC power switch, circled in Yellow in the above picture. White LED next to the USB port comes on when the power applied.

<!> Do not turn off the PC power switch while the PC is still running!

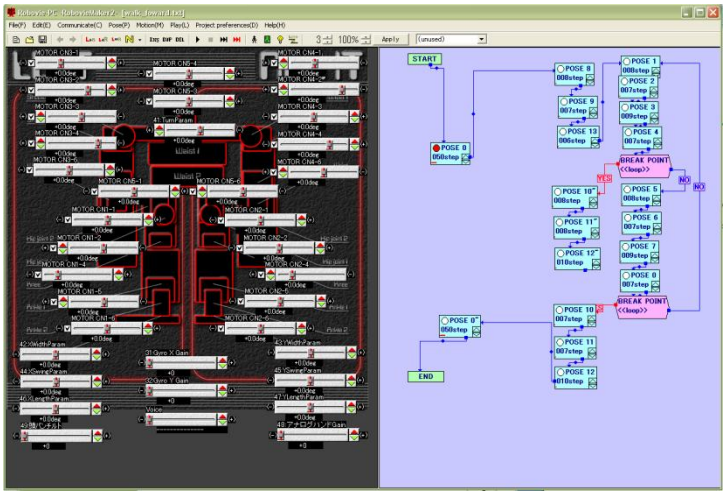
5.4 Internal connection diagram

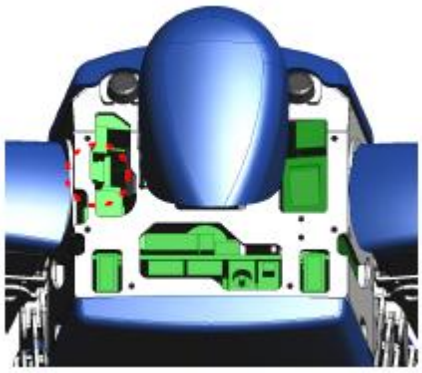


6 Software

6.1 RobovieMaker2

6.1.1 RobovieMaker2 is a software to create a motion for the robot





After the installation of Windows XP to PC board on your robot, you can run RobovieMaker2 from it and create motions.

Also, you can create motions from an external PC by connecting a USB to mini USB cable. When you are using an external PC to create a motion, please turn off the internal PC board and the power switch to the board.

Please look at a user manual for Roboviemaker2 for more information.

<!> Please use latest version of RobovieMaker2, version 9 or version 10 is currently supporting KTX-PC and KTX-PC Pro.

6.1.2 Controlling Servo Controller (VS-RC003) from internal PC

6.1.2.1 USB Communication

Please set “Activated Timer” to “-1”. Go to “Project Preferences” -> “CPU Preferences” -> “Basic Preference” -> “Active Timer”.

6.1.2.2 Serial Communication

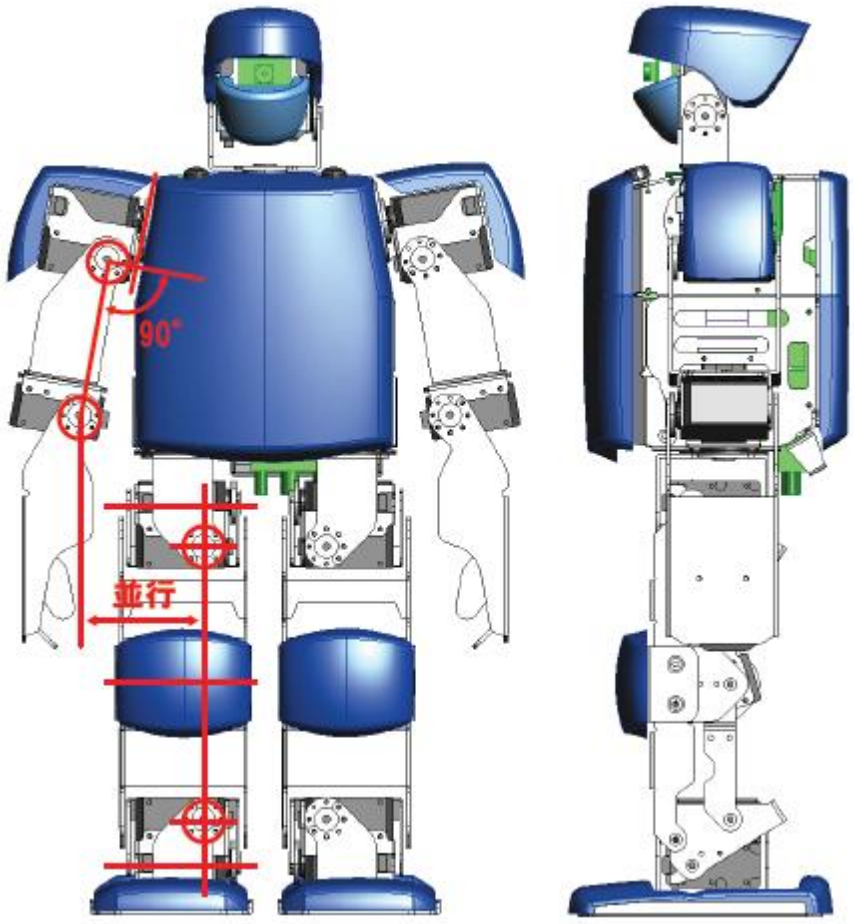
Please set “Activated Timer” to “-1”. Go to “Project Preferences” -> “CPU Preferences” -> “Basic Preference” -> “Active Timer”.

Also, Go to “Project Preferences” -> “CPU Preferences” -> “Serial Setting” and set NC7 to “command port”.

<!> If you are not seeing “serial setting” feature, you might be using older version of RobovieMaker2. Please install version or 10 upper to do serial communication.

6.2 Initial Setup

6.2.1 Setting up initial position using RobovieMaker2

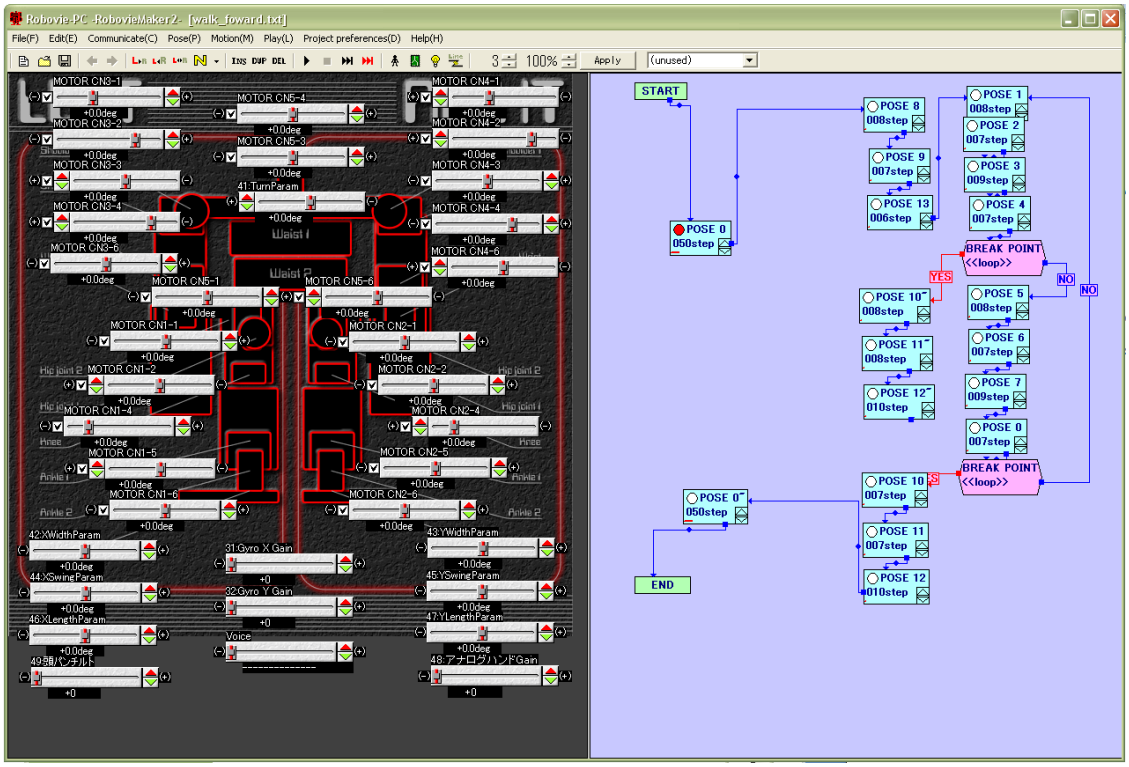


Before start using the robot or after long use of the robot, the angle of the joint might change. Please setup the initial position by using RobovieMaker2. The detailed instruction to setup initial position is explained in RobovieMaker2 User Manual.

<!> Please hold the robot body when you turn the robot power on. If you are holding the part close to the joints, you might pinch your fingers.

6.3 Creating Motion

Detailed instruction is on RobovieMaker2 User Manual.



6.4 Installing Operating Systems

6.4.1 Installing Windows

<!> Please use external CD/DVD drive with AC Adapter (uses external power supply). If you use the drive on USB power, then the I/O board will burn out and might not work properly anymore.

6.4.1.1 Installing XP

Follow the windows installation manual to install

<!> Please do not set password for your login.
<!> Change the BIOS keyboard setup to “All But Keyboard”. Go to “BIOS setup” -> “Standard CMOS Feature” -> “Halt On” -> “All Bat Keyboard”.

6.4.1.2 Install Drivers

Download and install driver from Kumotek Website or the CD came with the robot.

After the installation of the driver for the graphics card, the display might not show up again. Please use command “Ctrl+Alt+F1” to go back to the normal display (CRT). If the command is still not make you go back to the normal display, then you might have setup a login password. Try entering "your password" + "Enter" + "Ctrl+Alt+F1".

6.4.1.3 Check the Devices

Go to Device Manager and make sure the all the devices is installed and recognized successfully. If you have a device listed under "image devices", then you have camera installed correctly. Also you should see a “COM1” and “COM2” under “Port”.

<!> Make sure cable coming out from the camera is connected to your PC board.